

What is claimed is:

1. A method for transporting substrates between a plurality of processes, comprising:

5 loading the substrates into a pod from an atmosphere of a first process;

circulating a gaseous atmosphere through interior of the pod intermittently or continually in such a way to selectively remove at least one contaminant including moisture, particulate substances or chemical substances, to expose the substrates to a controlled atmosphere while the substrates are retained in the pod; and

10 unloading the substrate from the pod to introduce into a second process.

2. A method according to claim 1, wherein an atmosphere in the first process is different than an atmosphere in the second process.

15 3. A method according to claim 1, wherein a gas circulated in the pod contains no particles of larger than $0.1\ \mu\text{m}$ in excess of $10\ \text{particles}/\text{m}^3$, or organic substances in excess of $1\ \mu\text{g}/\text{m}^3$.

20 4. A method according to claim 1, wherein a gas in the pod is circulated and/or controlled in any selective pattern or atmosphere.

5. A method according to claim 4, wherein an interior environment of the gaseous atmosphere is controlled in any selective pattern by operating a circulation apparatus and/or dehumidifying apparatus.

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6. A method according to claim 1, wherein an interior environment of the pod is controlled in any selective pattern according to information on an atmosphere used in the first process.

7. A method according to claim 1, wherein a pod having most suitable capabilities is selected for use according to information on an atmosphere of the first process.

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8. A substrate transport apparatus comprising a substrate transport pod that can be sealed hermetically for holding substrates therein, said substrate transport pod comprising:

10 at least one filter for purifying the gas, including a filter for removing particular substances, a filter for removing chemical substances or a dehumidifying apparatus for removing moisture;

a circulation apparatus for circulating a purified gas; and

a holding apparatus for holding the substrates so as to match the state of the substrates by exposing the substrates to the purified gas.

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9. A method according to claim 8, wherein the pod is provided with a gas sensor for detecting a processing gas.

20 10. A method according to claim 9, wherein the circulation apparatus is controlled according to information provided by the gas sensor.

11. A substrate transport pod for containing, storing or transporting substrates, comprising:

25 a pod main body and a door for hermetic sealing of the pod main body, which is formed primarily of a material having moisture absorption coefficient of not more than 0.1 %, wherein the pod main body is in contact with the substrates directly or indirectly and has a conductive part so as to enable static charges to be drained from the pod main body.

12. A substrate transport pod according to claim 11, wherein a flow guiding structure is provided in interior of the pod main body for guiding a flow of a gas to the substrates.

5 13. A substrate transport pod according to claim 11, wherein a sensor is provided for detecting whether the door is opened or closed.

14. A substrate transport pod according to claim 11, wherein a sensor is provided for detecting presence of the substrates.

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15. A substrate transport pod according to claim 13, wherein the gas circulation means for circulating a gas through the pod is provided, and stopped when the door is in the closed state.

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16. A substrate transport pod according to claim 14, wherein the gas circulation means is provided, and operated only when it is detected that the door is closed and the pod contains the substrates.

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17. A substrate transport pod according to claim 11, wherein the pod is provided with a gas circulation means in its interior space for circulating an internal gas.

18. A substrate transport pod according to claim 11, wherein the pod is provided with a humidifying means in its interior space for removing moisture from an internal gas.

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19. A substrate transport pod according to claim 11, wherein the pod is provided with powering means for supplying electrical power.

20. A substrate transport pod according to claim 19, wherein the powering means comprises secondary batteries installed on the pod.

5 21. A substrate transport pod according to claim 20, wherein a powering means is further provided for charging the secondary batteries.

22. A substrate transport pod according to claim 19, wherein the powering means is constructed to be non-contacting and is operated electromagnetically.

10 23. A substrate transport pod according to claim 19, wherein the powering means is constructed to be contacting through point contacts.

15 24. A substrate transport pod according to claim 19, wherein the powering means is provided at least on a load port of a manufacturing apparatus, in a storage facility or on a transport apparatus.

25. A substrate transport pod according to claim 19, wherein powering is started as the pod is seated in the powering means.

20 26. A substrate transport pod according to claim 11, wherein the pod is provided with a circulation apparatus for circulating a gas inside the pod and at least one of a particle filter, a chemical filter and a dehumidifying apparatus.

25 27. A substrate transport pod according to claim 26, wherein a filter and a gas circulation means are formed as a unit in a form of a rod.

28. A substrate transport pod according to claim 26, wherein a filter is cylinder shaped and the gas flows in a radial direction of the cylindrical filter.

29. A substrate transport pod according to claim 26, wherein a filter is rod shaped and the gas flows in a longitudinal direction of the rod filter.

5 30. A substrate transport pod according to claim 26, wherein a ducting and/or a flow control apparatus is provided for guiding the gas.

31. A substrate transport pod according to claim 11, wherein the pod has a gas intake opening and a gas discharge opening for the gas circulated inside the pod.

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32. A substrate transport pod according to claim 31, wherein a reverse flow prevention mechanism is provided at least on the gas intake opening or the gas discharge opening.

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33. A substrate transport pod according to claim 31, wherein a ducting and/or a flow control apparatus is provided to connect to the gas intake opening.

34. A substrate transport pod according to claim 31, wherein a chemical filter, and a particle filter and/or a dehumidifying apparatus is provided in the vicinity of the gas intake opening and/or a gas discharge opening.

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35. A substrate transport pod according to claim 11, wherein the pod is oriented so that a center of gravity in a horizontal direction lies within at least 90 % or preferably 70 % of a radius of substrates.

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36. A substrate transport pod according to claim 11, wherein the pod is provided with an internal environment matching a processing atmosphere for substrates contained in the pod, and is used to transport the substrates between a plurality of

processes.

37. A substrate transport apparatus comprising: a substrate transport pod that can be sealed hermetically for holding substrates therein, said substrate transport pod
5 comprising:

at least one of a particle filter, a chemical filter, and a dehumidifying apparatus for removing, respectively, particulate substances, chemical substances, and moisture from a gas circulated inside the pod;

a gas circulation apparatus for circulating a purified gas;

10 a holding apparatus for holding the substrates so as to keep the state of the substrates by exposing the substrates to the purified gas; and

an identifier for distinguishing individual pods, whose historical data is managed by a computing apparatus.

15 38. A substrate transport pod according to claim 37, wherein the pod is provided with a data storing apparatus.

39. A substrate transport pod according to claim 37, wherein the pod has a means for receiving external signals, and controls internal environment in the pod
20 according to the external signals.

40. A substrate transport pod according to claim 37, wherein an internal environment is controlled by sending and receiving information between the pod and a processing apparatus.

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41. A substrate transport pod according to claim 37, wherein the pod is provided with processing history management information on substrates, and processing of the substrates is managed by transferring the processing history management

information from one pod to other pod.

42. A substrate transport pod according to claim 41, wherein the processing history management is carried out by way of a host computer network.

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43. A substrate transport pod according to claim 41, wherein a processing history is transferred from one pod to other pod by a controller provided on a processing apparatus.

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44. A substrate transport pod according to claim 37, wherein a washing interval for a pod is managed by information stored in memory means of the pod.

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45. A substrate transport pod according to claim 37, wherein a filter change interval of a pod is computed from a product of a processed gas volume and a duration of pod operation.

46. A substrate transport pod according to claim 37, wherein a washing interval is estimated from a duration of pod operation.

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47. A substrate transport pod according to claim 37, wherein residual power of the secondary batteries provided for a pod is measured, and charging is carried out to a necessary level of power.

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48. A substrate transport pod according to claim 37, wherein management of information on individual pods is carried out by sending and receiving information for individual pods by wire or radio transmission through a network.

49. A substrate transport pod according to claim 37, wherein processing history

management information for a lot is transferred from a pod used in a preceding step to a pod to be used in a succeeding step.

50. A substrate transport pod according to claim 37, wherein information on a pod to be washed is sent to a pod washing machine so that the pod can be selected and subjected to washing.

51. A substrate transport pod according to claim 8, wherein a level of ammonia in an interior atmosphere of a pod is maintained below a given level when the pod contains substrates whose surfaces are resist-coated.

52. A substrate transport pod according to claim 51, wherein an ammonia level in interior of the pod is controlled by adsorbing ammonia gas by means of a chemical filter.

53. A substrate transport pod according to claim 51, wherein a humidity level in interior of the pod is controlled by removing moisture using a dehumidifying apparatus provided for the pod.

54. A substrate transport pod according to claim 8, wherein the pod is provided with a contaminant removal means and target components are selectively chosen for removing particulate contaminants, metallic contaminants, ionic contaminants, organic contaminants and moisture, and the pod is used for return transport for each process.

55. A method for manufacturing a semiconductor device by transporting substrates between a plurality of processes, comprising:

loading the substrates into a pod from an atmosphere of a first process;

circulating a gaseous atmosphere through interior of the pod in such a way to

selectively remove at least one contaminant including moisture, particulate substances or chemical substances, to expose the substrates to a controlled atmosphere intermittently or continually while the substrates are retained in the pod; and

unloading the substrates from the pod and introducing the substrates into a

5 second process.